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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,275	08/26/2003	Hideo Ukuda	03500.017520.	2643

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EXAMINER

STULTZ, JESSICA T

ART UNIT PAPER NUMBER

2873

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/647,275

Applicant(s)

UKUDA, HIDEO

Examiner

Jessica T Stultz

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1003_0304.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 8-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogawa.

Regarding claim 1, Ogawa discloses an optical material satisfying the claimed conditions regarding the refractive index at the d-line, the Abbe number at the d-line (Column 15, Table 1, wherein the negative lenses in Example 1, specifically lenses 4, 6-8, 11-12, 14 and diffraction grating 16, have refractive indices and respective Abbe numbers that fall within the claimed condition, Figure 6) and a second order dispersion at the d-line (Column 12, lines 29-67, wherein the second order dispersion, i.e. θ_{gF} is less than either 0.61 or less than preferably less than 0.591 for negative lenses in the optical system, wherein the Abbe numbers for negative lenses fall between 27 and 50, therefore fulfilling the required conditions, see conditions 6-8).

Regarding claim 2, Ogawa further discloses that the optical material has an Abbe number that is 30 or less (Column 12, lines 29-34, wherein the negative lenses have Abbe numbers ranging from 27 to 50, which fall within the claimed range and Column 15, Table 1, wherein the negative lens 8 in lens group 3 of Example 1 has an Abbe number of 26.7 and Column 19, lines 41-51, wherein the Abbe number of diffraction grating “105” is 28, which fall within the claimed range).

Regarding claim 8, Ogawa further discloses that the optical element comprises an optical material formed in a desired shape by a curing reaction (Column 19, lines 24-51, wherein the diffraction grating “G” is formed by an ultraviolet curable polymer, Figures 6 and 21).

Regarding claim 9, Ogawa further discloses that the optical element has one surface that is a diffracting surface with a diffractive shape (Column 19, lines 24-51, wherein the diffractive elements “104” and “105” form the grating “G” and have diffractive surfaces, Figures 6, 21, and 24).

Regarding claim 10, Ogawa further discloses that the optical element has a refracting surface in a refractive shape (Column 15, Table 1, wherein the negative lenses in Example 1, specifically lenses 4, 6-8, 11-12, and 14, are refractive lenses with negative refractive surfaces, Figure 6).

Regarding claim 11, Ogawa further discloses that the optical system include another optical element arranged in one and the same optical path (Column 19, line 24-Column 20, line 13, wherein the diffractive elements “104” and “105” form the grating “G” and are in the same optical path, Figures 6, 21, and 24).

Regarding claim 12, Ogawa further discloses that the system images an object (Column 20, line 14-47, wherein the optical system is used in a photographic lens which images an object, Figure 25).

Regarding claim 13, Ogawa further disclose that the system projects light onto an object (Column 20, lines 14-47, wherein the system is used in a photographic lens which projects light onto an object to produce an image).

Art Unit: 2873

Regarding claim 14, Ogawa discloses a laminated diffractive optical element comprising: a first diffractive optical element having a surface formed into a diffractive shape and a second diffractive optical element having a surface formed into a diffractive shape (Column 19, line 41-Column 20, line 13, wherein the first diffractive element is “105” and the second diffractive element is “104”, Figures 21 and 24), wherein the first optical element is made of an optical material that satisfies the claimed conditions of the refractive index at the d-line, the Abbe number at the d-line (Column 19, lines 41-51, wherein the refractive index and Abbe number of diffractive element “105” satisfies the claimed conditions, Figures 21 and 24), and a second order dispersion at the d-line (Column 12, lines 29-67, wherein the second order dispersion, i.e. θ_{gF} is less than either 0.61 or less than preferably less than 0.591 for negative lenses in the optical system, wherein the Abbe numbers for negative lenses fall between 27 and 50, therefore fulfilling the required conditions, see conditions 6-8); wherein the second optical element has an Abbe number larger than the first diffractive optical element (Column 19, lines 41-51, wherein the second diffractive element “104” has an Abbe number greater than the first diffractive element “105”, Figure 21); and the diffracting surface of the first optical element and the diffracting surface are arranged in an opposite position (Figure 24).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2873

Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view of Hisatake et al.

Regarding claims 3-4 and 6-7, Ogawa discloses an optical material as shown above, wherein the diffraction grating is made of a polymer (Column 19, lines 24-51, wherein the grating comprising components “104” and “105” are made of a UV curable polymer, Figure 21) having a second order dispersion value of 0.45 or less (Column 12, lines 29-67, wherein the second order dispersion, i.e. θ_{gF} is less than either 0.61 or less than preferably less than 0.591 for negative lenses in the optical system, see conditions 7-8), but does not specifically disclose that the optical material comprises inorganic nanoparticles, specifically ITO particles, or that the optical material is made of ITO or polystyrene. Hisatake et al teaches of a diffraction grating made of polystyrene or ITO (Column 16, lines 50-65, wherein the liquid crystal display includes a light diffusing layer that forms a diffraction grating made of polystyrene or ITO) which includes inorganic ITO particles (Column 17, line 47-Column 18, line 5, wherein the light diffusing layer includes fine particles of ITO) for the purpose of providing a diffusing layer with materials of different refractive indices to enhance diffusion (Column 17, line 47-Column 18, line 5). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the optical material of Ogawa to comprise inorganic nanoparticles, specifically ITO particles, wherein the optical material is made of ITO or polystyrene since Hisatake et al teaches of a diffraction grating made of polystyrene or ITO which includes inorganic ITO particles for the purpose of providing a diffusing layer with materials of different refractive indices to enhance diffusion.

Art Unit: 2873

Regarding claim 5, Ogawa and Hisatake et al disclose and teach of an optical material as shown above and it is further inherent from Hisatake et al that the ITO particles are 2 to 5 nm, this being reasonably based upon the particles being disclosed as fine particles (Column 17, line 47-Column 18, line 5) within a diffusion layer having very small thickness, specifically 0.1 to 0.4 micrometers (Column 16, lines 50-65).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakai and Kimura et al are cited as having some similar structure to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

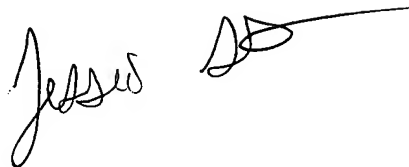
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/647,275

Page 7

Art Unit: 2873

Jessica Stultz
Patent Examiner
AU 2873
August 18, 2004

A handwritten signature in cursive script, appearing to read "Jessica", followed by a horizontal line.A handwritten signature in cursive script, appearing to read "Jordan", followed by a large loop.

JORDAN SCHWARTZ
PRIMARY EXAMINER